

REMARKS

Introduction:

Claims 1-5, 8-10, 33-37, 40-42, 55-59, and 62-66 were pending in the patent application when an Office Action mailed October 21, 2004 rejected all pending Claims. The Office Action also requested changes to the Figures as not showing every feature of the invention recited in the Claims.

By way of this Amendment, and without introducing new matter, the Applicants have amended the Figures, Specification, and the Claims. Applicants respectfully request entry of the amendment, reconsideration, and allowance of all claims pending in this patent application.

Changes to the Specification:

The Specification was amended to include a description of the FIGURE 2C, and with reference to FIGURES 2A and 2B to reflect features recited, *inter alia*, in Original Claims 2, 3, and 4. Because the original claims form part of the specification, no new matter has been added. Applicants respectfully request entry of this amendment to the Specification.

In the Drawings:

New FIGURE 2C is added and show the features that are recited, *inter alia*, in Original Claims 3 and 4. FIGURES 2A and 2B are amended to call out a feature recited, *inter alia*, in Original Claim 2. Because Original Claims 2, 3, and 4, form part of the specification, no new matter has been added. Applicants respectfully request entry of new FIGURES 2A, 2B and 2C.

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BOEI-1-1195ROA

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Rejection of Claims 1-5, 8-10, 33-37, 40-42, 55-59, and 62-66 under 35 U.S.C. § 103(a):

The Office Action rejected Claims 1-5, 8-10, 33-37, 40-42, 55-59, and 62-66 as being unpatentable over Delaney or Gano in view of <http://www.fanwars.plan/pic/X-wing.jpg>.

In the accompanying Declaration Regarding Date of Invention, Long Felt Need, and Unexpected Results, by inventor Boeing Technical Fellow Dr. Dale M. Pitt, the invention date is documented as pre-dating Gano. Gano is therefore removed as prior art.

Delaney is a design patent for the "X-wing" amusement space vehicle of the Star Wars movies. The "wings" or weapons carriers of the space vehicle are drawn as planar, and do not teach or suggest any airfoil function, nor morphing function (as noted by the Examiner).

[Http://www.fanwars.plan/pic/X-wing.jpg](http://www.fanwars.plan/pic/X-wing.jpg) (herein "Fanwars") shows extension and closing of a "S-Foil Wing Assembly", "extended for combat, closed for cruising speed". Fanwars shows no airfoil. Further, Fanwars teaches away from the subject invention, or put differently, the principle of operation of Fanwars is different from the subject invention, where the wings are extended for cruise or slow speed, and closed for dash capabilities. MPEP §§ 2141.02; 2143.01.

As noted in the accompanying Declaration, in Star Wars, the "X-wing Fighters" are vertical takeoff space vehicles, and show no atmospheric airfoil features of the "wings." The "wings" in Fanwars are shown as weapons carriers (carrying "laser cannon"), operating in the reverse of the invention here.

With a full reservation of the subject matter in the original application herein, Applicant has amended Claims 1, 10, 33, and 55 to reflect that the claimed airfoils are non-planar, and Claim. No non-planar airfoil is disclosed or suggested in Fanwars or Delaney.

With a full reservation of the subject matter in the original application herein, Applicant also has amended Claims 64 to reflect a combined airfoil configured for reduced drag during high speed flight in the first position, where the airfoils are together. No such limitation is disclosed or suggested in Fanwars or Delaney.

Applicant respectfully submits that a *prima facie* case of obviousness has not been established because the combinations of cited references do not teach or suggest the claimed invention. Delaney in view of Fanwars does not teach or suggest a morphing non-planar airfoil arranged to move at least one of the first airfoil and the second airfoil from a first position with the first tip and second tip near each other to a second position with the first tip and the second tip spaced apart. Fanwars teaches away from, and shows a contrary operation principle a low drag high speed airfoil when the first and second airfoils are combined.

As a result, a *prima facie* case of obviousness has not been established, and Claims 1, 10, 33, 55, and 64, as amended, are patentable over the combinations of cited references. The balance of the claims depend from allowable claims 1, 10, 33, and 55 and are therefore allowable for the same reasons as their respective base claims, as well as the additional limitations in those claims.

Claims 1-5, 8-10, 33-37, 40-42, 55-59, and 62-66 are also allowable over Delaney in view of Fanwars for strong secondary considerations, based on the factual history and test results provided by Dr. Pitt. While the Examiner's citation to Fanwars and Delaney is intriguing, Star Wars debuted in the late 1970's. In the intervening period there have been no developments or publications concerning the morphing airfoil systems and methods of the present invention. As noted in the accompanying Declaration of Dr. Pitt, there has been a long-felt need for increased ranges of combined low speed and high speed performance in aircraft, as well as for higher stall angles, but no device as presented herein has been developed. Also, the invention was unexpectedly successful in deriving increased ranges of lift and increased stall angles. MPEP 716.01-.04. Accordingly, based upon these secondary factors as well, Applicants respectfully traverse the rejection of Claims 1-5, 8-10, 33-37, 40-42, 55-59, and 62-66.

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Conclusion:


Applicants respectfully submit that all claims remaining in this patent application are in condition for allowance. Objections to the drawings have been overcome without introducing new matter. All of the claims are patentable over the cited references.

Applicants respectfully request entry of the amendment, and reconsideration and allowance of all claims remaining in this patent application.

If the Examiner has questions, the Examiner is invited to contact the Applicants attorney listed below.

Respectfully submitted,

BLACK LOWE & GRAHAM^{PLLC}



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MAIL CERTIFICATE

I hereby certify that this communication is being deposited with the United States Postal Service via first class mail under 37 C.F.R. § 1.08 on the date indicated below addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

3/21/05
Date of Deposit


Michelle Furston-Carman

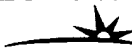
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IN THE FIGURES:

Without adding new matter, Revised Formal Drawings are provided, attached. A new Figure 2C is provided showing a pivot and a drive mechanism, previously included in the Claims. Figures 2A and 2B are amended to call out a hinge, previously included in the Claims.

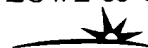
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